



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

22501 7590 09/03/2009

CHRISTOPHER P MAIORANA, PC
LSI Corporation
24840 HARPER
SUITE 100
ST CLAIR SHORES, MI 48080

EXAMINER

HALLENBECK-HUBER, JEREMIAH CHARLES

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 09/03/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/619,531

07/15/2003

Doni S. Dattani

03-0444 1496.00308

7492

TITLE OF INVENTION: INTRA ESTIMATION CHROMA MODE 0 SUB-BLOCK DEPENDENT PREDICTION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/03/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22501 7590 09/03/2009

CHRISTOPHER P MAIORANA, PC
LSI Corporation
24840 HARPER
SUITE 100
ST CLAIR SHORES, MI 48080

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/619,531 07/15/2003 Doni S. Dattani 03-0444 1496.00308 7492

TITLE OF INVENTION: INTRA ESTIMATION CHROMA MODE 0 SUB-BLOCK DEPENDENT PREDICTION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
-------------	--------------	---------------	---------------------	----------------------	------------------	----------

nonprovisional NO \$1510 \$300 \$0 \$1810 12/03/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
----------	----------	----------------

HALLENBECK-HUBER, JEREMIAH 2621 375-240240

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____</p> <p>(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____</p> <p>3 _____</p>
---	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,531	07/15/2003	Doni S. Dattani	03-0444 1496.00308	7492
22501	7590	09/03/2009	EXAMINER	
CHRISTOPHER P MAIORANA, PC LSI Corporation 24840 HARPER SUITE 100 ST CLAIR SHORES, MI 48080			HALLENBECK-HUBER, JEREMIAH CHARLES	
			ART UNIT	PAPER NUMBER
			2621	
			DATE MAILED: 09/03/2009	

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 958 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 958 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/619,531	DATTANI ET AL.	
	Examiner	Art Unit	
	JEREMIAH C. HUBER	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed 3/24/2009.
2. ☒ The allowed claim(s) is/are 1-9,12,13,15-18 and 20-25.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

/Dave Czepak/
Primary Examiner, Art Unit 2621

/Jeremiah Huber/
Examiner, Art Unit 2621

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John Ignatowski on 8/28/2009.

The application has been amended as follows:

Claim 1

An apparatus comprising:

A first processing circuit configured to generate a plurality of reconstructed samples in response to a plurality of neighboring macroblocks of an input signal; and

A second processing circuit configured to: ~~(A)~~ determine an intra prediction chroma mode 0 from a plurality of intra prediction chroma modes; ~~(B)~~ generate a plurality of sum values S0, S1, S2 and S3 based on said reconstructed samples for ~~each of a plurality of chroma sub-blocks respectively of a current~~ chroma block said sum values being used in a plurality of formulas; and ~~(C)~~ determine a plurality of intra prediction chroma mode 0 predictions A, B, C and D for ~~each of a plurality of said sub blocks respectively of a current macroblock~~ said current chroma block

wherein in a first case when ~~concerning a first of said chroma sub-blocks having~~ only said sum value S0 is unavailable, said intra prediction chroma mode 0 predictors

Art Unit: 2621

are generated using ~~said~~ the formulas $A = (S2+2)/4$, $B = (S1+2)/4$, $C = (S3+2)/4$ and $D = (S1+S3+4)/8$.

Claim 3

The apparatus according to claim 1, wherein: (i) said first and second processing circuits are part of a decoder; and (ii) said second processing circuit is further configured to use a subset of said formulas to generate said intra prediction chroma mode 0 predictors of said current chroma block ~~first chroma sub-block~~, said formulas in said subset being identified in a signal received within a compressed and encoded video bitstream.

Claim 5

The apparatus according to claim 1, wherein said second processing circuit comprises:

a third processing circuit configured to generate said current chroma block ~~chroma sub-blocks~~ in response to said intra prediction chroma mode 0 predictors.

Claim 12

An apparatus comprising:

means for generating a plurality of reconstructed samples in response to a plurality of neighboring macroblocks of an input signal; and

means for: ~~(A)~~ determining an intra prediction chroma mode 0 from a plurality of intra prediction chroma modes; ~~(B)~~ generating a plurality of sum values S0, S1, S2 and S3 based on said reconstructed samples for ~~each of a plurality of chroma sub-blocks respectively of a current chroma macroblock~~ said sum values being used in a plurality of formulas; and ~~(C)~~ determining a plurality of intra prediction chroma mode 0 predictions A, B, C and D for ~~each of a plurality of said sub-blocks respectively of a current macroblock~~ said current chroma block

wherein in a first case when ~~concerning a first of said chroma sub-blocks having~~ only said sum value S0 is unavailable, said intra prediction chroma mode 0 predictors are generated using ~~said the~~ the formulas $A = (S2+2)/4$, $B = (S1+2)/4$, $C = (S3+2)/4$ and $D = (S1+S3+4)/8$.

Claim 13

A method for intra prediction of a chroma block comprising the steps of:

~~(A)~~ generating a plurality of reconstructed samples in response to a plurality of neighboring macroblocks of an input signal using a first processing circuit;

~~(B)~~ determining an intra prediction chroma mode 0 from a plurality of intra prediction chroma modes;

~~(C)~~ generating a plurality of sum values S0, S1, S2 and S3 based on said reconstructed samples for ~~each of a plurality of chroma sub-blocks respectively of a current chroma macroblock~~ said sum values being used in a plurality of formulas; and

Art Unit: 2621

~~(D)~~ determining a plurality of intra prediction chroma mode 0 predictions A, B, C and D for ~~each of a plurality of said sub blocks respectively of a current macroblock~~ said current chroma block

wherein in a first case when ~~concerning a first of said chroma sub blocks having~~ only said sum value S0 is unavailable, said intra prediction chroma mode 0 predictors are generated using ~~said the~~ formulas $A = (S2+2)/4$, $B = (S1+2)/4$, $C = (S3+2)/4$ and $D = (S1+S3+4)/8$.

Claim 17

The method according to claim 23, wherein in a third case when ~~concerning a third of said sub chroma blocks having~~ only said sum value S1 unavailable said intra prediction chroma mode 0 predictors are generated using ~~said the~~ formulas $A = (S0+S2+4)/8$, $B = (S2+2)/4$, ~~said~~ $C = (S3+2)/4$ and $D = (S3+2)/4$.

Claim 21

The apparatus according to claim 1, wherein in a second case when ~~concerning a second of said chroma sub blocks having~~ only said sum value S0 is available, said intra prediction chroma mode 0 predictors are generated using the ~~said~~ formulas $A = (S0+2)/4$, B [=] is set to a predetermined constant, $C = (S0+2)/4$, and D [=] is set to said predetermined constant. (Examiner note: the equals signs following B and D are removed, striking through the equal symbol does not show up clearly)

Claim 22

The apparatus according to claim 1, wherein said second processing circuit is further configured to generate a signal that identifies a subset of said formulas used by said second circuit to generate said intra prediction chroma mode 0 predictors correspond to said current chroma block ~~first chroma sub-block~~, said apparatus further comprising an encoder configured to generate a compressed and encoded video bit stream incorporating said signal.

Claim 23

The method according to claim 13, wherein in a second case ~~when concerning a second of said chroma sub-blocks having~~ only said sum value S_0 is available, said intra prediction chroma mode 0 predictors are generated using ~~the said~~ formulas $A = (S_0 + 2)/4$, $B [=]$ is set to a predetermined constant, $C = (S_0 + 2)/4$, and $D [=]$ is set to said predetermined constant. (Examiner note: the equals signs following B and D are removed, striking through the equal symbol does not show up clearly)

Claim 24

The method according to claim 13 further comprising the steps of:
generating a signal that identifies a subset of said formulas used by a second processing circuit to generate said intra prediction chroma mode – predictors corresponding to said ~~first chroma sub-block~~ case; and
generating a compressed and encoded bitstream that incorporates said signal..

Claim 25

The method according to claim 13, wherein said first processing circuit is part of a decoder and (iii) said intra prediction chroma mode 0 predictors for said first ~~chroma sub-block~~ case are generated using a subset of said formulas, said formulas in said subset being identified in a signal received within a compressed and encoded video bit stream.

Allowable Subject Matter

Claims 1-9,12,13,15-18 and 20-25 are allowed.

The following is an examiner's statement of reasons for allowance:

The claims require intra prediction chroma mode 0 of a chroma block using a set of sum value predictors S0-S3. The claims further indicate that chroma mode 0 prediction occurs according to a specific set of formulas when only the value S0 is unavailable. The closest art is Sun (2003/0202705) in view of Working Draft Number 2, Revision 2 (WD2), which discloses intra prediction chroma mode 0 prediction using sum values S0-S3, according to specific formulas. The prior art further discloses performing such prediction with both sum values S0 and S1 are unavailable or when S2 and S3 are unavailable or when all sum values are unavailable. However, the prior art does not disclose performing such prediction when only the value S0 is unavailable, or does it disclose the particular equations recited in the claims.

Art Unit: 2621

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

/Jeremaiah Huber/

Examiner, Art Unit 2621

/Dave Czekaj/

Primary Examiner, Art Unit 2621